Energy Harbor Nuclear Corp.
Beaver Valley Power Station
P. O. Box 4
Shippingport, PA 15077

Rod L. Penfield
Site Vice President, Beaver Valley Nuclear

724-682-5234

July 10, 2020
L-20-144

10 CFR 50.90

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:
Beaver Valley Power Station, Unit Nos. 1 and 2
Docket No. 50-334, License No. DPR-66
Docket No. 50-412, License No. NPF-73
License Amendment Request – Application to Revise Technical Specifications to Adopt TSTF-567, "Add Containment Sump TS to Address GSI-191 Issues"

Pursuant to 10 CFR 50.90, “Application for amendment of license or construction permit,” Energy Harbor Nuclear Corp. is submitting a request for an amendment to the Technical Specifications (TS) for Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS).

Energy Harbor Nuclear Corp. requests adoption of TSTF-567, "Add Containment Sump TS to Address GSI-191 Issues," Revision 1, which is an approved change to the Improved Standard Technical Specifications (ISTS), into the BVPS Technical Specifications (TSs). The proposed amendment adds a new Technical Specification (TS) 3.6.9, "Containment Sump," and adds an Action to address the condition of the containment sump made inoperable due to containment accident generated and transported debris exceeding the analyzed limits. The Action provides time to correct or evaluate the condition in lieu of an immediate plant shutdown.

The enclosure provides a description and evaluation of the proposed changes. Attachment 1 provides the existing TS pages marked to show the proposed changes. Attachment 2 provides revised (clean) TS pages with the proposed changes incorporated and includes three new TS pages. Attachment 3 provides existing TS Bases pages marked to show the proposed changes for information only.

As TSTF-567, Revision 1, was approved by the Nuclear Regulatory Commission (NRC) staff through the consolidated line item improvement process (CLIIP), approval of this license amendment is requested within six months. Once approved, the amendment would be implemented 60 days following receipt of the NRC closure letter for actions to address Generic Letter 2004-02 at BVPS. This will allow time to process updated final safety analysis report changes to incorporate containment sump debris limits and make

the changes effective at the same time the proposed containment sump TS is made effective.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Phil H. Lashley, Acting Manager, Nuclear Licensing and Regulatory Affairs, at (330) 696-7208.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 10, 2020.

Sincerely,

Rod L. Penfield

Enclosure:
Evaluation of Proposed Change

cc: NRC Region I Administrator
NRC Resident Inspector
NRR Project Manager
Director BRP/DEP
Site BRP/DEP Representative

Subject: License Amendment Request to Adopt TSTF-567

1.0 DESCRIPTION

Energy Harbor Nuclear Corp. requests adoption of TSTF-567, "Add Containment Sump TS to Address GSI-191 Issues," Revision 1, which is an approved change to the Improved Standard Technical Specifications (ISTS), into the Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS) Technical Specifications (TSs).

The proposed amendment adds a new Technical Specification (TS) 3.6.9, "Containment Sump," and adds an Action to address the condition of the containment sump made inoperable due to containment accident generated and transported debris exceeding the analyzed limits. The Action provides time to correct or evaluate the condition in lieu of an immediate plant shutdown. This Action is placed in a new specification on the containment sump that otherwise retains the existing TS requirements. An existing Surveillance Requirement (SR) 3.5.2.7 is moved from TS 3.5.2 to the new specification. The requirement to perform SR 3.5.2.7 in TS 3.5.3 is deleted.

2.0 ASSESSMENT

2.1 Applicability of Safety Evaluation

Energy Harbor Nuclear Corp. has reviewed the safety evaluation for TSTF-567 provided to the Technical Specifications Task Force in a letter dated July 3, 2018. This review included the Nuclear Regulatory Commission (NRC) staff's evaluation, as well as the information provided in TSTF-567. Energy Harbor Nuclear Corp. has concluded that the justifications presented in TSTF-567 and the safety evaluation prepared by the NRC staff are applicable to BVPS and justify this amendment for the incorporation of the changes to the BVPS TS.

2.2 Variations

Energy Harbor Nuclear Corp. is proposing the following variations from the TS changes described in the TSTF-567 or the applicable parts of the NRC staff's safety evaluation. These variations do not affect the applicability of TSTF-567 or the NRC staff's safety evaluation to the proposed license amendment.

The BVPS TS utilize different numbering and titles than the Standard Technical Specifications (STS) on which TSTF-567 was based. These differences are listed below:

- TSTF-567 identifies the new sump TS as 3.6.19. For BVPS, this TS would be numbered 3.6.9.

- TSTF- 567 identifies SR 3.5.2.8 as the SR to be removed from TS 3.5.2 and TS 3.5.3. For BVPS, SR 3.5.2.7 would be removed from TS 3.5.2 and list of applicable SRs in SR 3.5.3.1.

- TSTF-567 identifies LCO 3.6.6 in the second note of required action B.1 in the new containment sump TS 3.6.9. For BVPS, LCO 3.6.7 would be referenced instead of LCO 3.6.6

These differences are administrative and do not affect the applicability of TSTF-567 to the BVPS TS.

Additionally, column headings “SURVEILLANCE” and “FREQUENCY” would be added to the table on page 3.5.2-3 to correct an issue introduced with a previous revision to the TS. This difference is also administrative and does not affect the applicability of TSTF-567 to the BVPS TS.

The BVPS TS contain a Surveillance Frequency Control Program. Therefore, the Frequency of SR 3.6.9.1 is “In accordance with the Surveillance Frequency Control Program.”

The traveler and model Safety Evaluation discuss the applicable regulatory requirements and guidance, including the 10 CFR 50, Appendix A, General Design Criteria (GDC). Beaver Valley Power Station, Unit No. 1 (BVPS-1) was designed and constructed to comply with the “General Design Criteria for Nuclear Power Plant Construction,” published in July 1967. BVPS-1 Updated Final Safety Analysis Report (UFSAR), Appendix 1A, provides a discussion of BVPS-1’s degree of conformance to the General Design Criteria published as Appendix A to 10 CFR 50 in July 1971. In Section 3.1 of the October 11, 1974 safety evaluation report for BVPS-1, the NRC staff concluded that the plant design conforms to the intent of these newer criteria. The proposed change does not alter the design of BVPS-1. As a result, the proposed change does not affect how the plant design conforms to the General Design Criteria. Therefore, this difference does not alter the conclusion that the proposed change is applicable to BVPS-1.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Analysis

The proposed amendment adds a new TS 3.6.9, "Containment Sump," and adds an Action to address the condition of the containment sump made inoperable due to containment accident generated and transported debris exceeding the analyzed limits. The Action provides time to correct or evaluate the condition in lieu of an immediate plant shutdown. This Action is placed in a new specification on the containment sump that otherwise retains the existing TS requirements. An existing SR is moved from TS 3.5.2 to the new specification. The requirement to perform the SR in TS 3.5.3 is deleted.

Energy Harbor Nuclear Corp. has evaluated whether a significant hazards consideration is involved with the proposed change by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1) Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed change adds a new specification to the TS for the containment sump. An existing SR on the containment sump is moved to the new specification and a duplicative requirement to perform the SR in TS 3.5.3 is removed. The new specification retains the existing requirements on the containment sump and the actions to be taken when the containment sump is inoperable with the exception of adding new actions to be taken when the containment sump is inoperable due to containment accident generated and transported debris exceeding the analyzed limits. The new action provides time to evaluate and correct the condition instead of requiring an immediate plant shutdown.

The containment sump is not an initiator of any accident previously evaluated. The containment sump is a passive component and the proposed change does not increase the likelihood of the malfunction. As a result, the probability of an accident is unaffected by the proposed change.

The containment sump is used to mitigate accidents previously evaluated by providing a borated water source for the Emergency Core Cooling System (ECCS) and Recirculation Spray (RS) System. The design of the containment sump and the capability of the containment sump assumed in the accident analysis is not changed. The proposed action requires implementation of mitigating actions while the containment sump is inoperable and more frequent monitoring of reactor coolant leakage to detect any increased potential for an accident that would require the containment sump. The consequences of an accident during the proposed action are no different than the current consequences of an accident if the containment sump is inoperable.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2) Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed change adds a new specification to the TS for the containment sump. An existing SR on the containment sump is moved to the new specification and a duplicative requirement to perform the SR in TS 3.5.3 is removed. The new specification retains the existing requirements on the containment sump and the actions to be taken when the containment sump is

inoperable with the exception of adding new actions to be taken when the containment sump is inoperable due to containment accident generated and transported debris exceeding the analyzed limits. The new action provides time to evaluate and correct the condition instead of requiring an immediate plant shutdown.

The proposed change does not alter the design or design function of the containment sump or the plant. No new systems are installed or removed as part of the proposed change. The containment sump is a passive component and cannot initiate a malfunction or accident. No new credible accident is created that is not encompassed by the existing accident analyses that assume the function of the containment sump.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3) Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

The proposed change adds a new specification to the TS for the containment sump. An existing SR on the containment sump is moved to the new specification and a duplicative requirement to perform the SR in TS 3.5.3 is removed. The new specification retains the existing requirements on the containment sump and the actions to be taken when the containment sump is inoperable with the exception of adding new actions to be taken when the containment sump is inoperable due to containment accident generated and transported debris exceeding the analyzed limits. The new action provides time to evaluate and correct the condition instead of requiring an immediate plant shutdown.

The proposed change does not affect the controlling values of parameters used to avoid exceeding regulatory or licensing limits. No Safety Limits are affected by the proposed change. The proposed change does not affect any assumptions in the accident analyses that demonstrate compliance with regulatory and licensing requirements.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Energy Harbor Nuclear Corp. concludes that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

3.2 Conclusion

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

4.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

Attachment 1

Technical Specification Page Markups
(5 pages follow)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.4	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.5.2.5	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.6	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
~~SR 3.5.2.7~~	~~Verify, by visual inspection, that accessible regions of the ECCS containment sump suction inlet are not restricted by debris and that the accessible regions of the strainers show no evidence of structural distress or abnormal corrosion.~~	~~In accordance with the Surveillance Frequency Control Program~~

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.3 ECCS - Shutdown

LCO 3.5.3 One ECCS train shall be OPERABLE.

APPLICABILITY: MODE 4.

ACTIONS

- NOTE -

LCO 3.0.4.b is not applicable to ECCS high head subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required ECCS train inoperable.	A.1 Restore required ECCS train to OPERABLE status.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 5.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	The following SRs are applicable for all equipment required to be OPERABLE: SR 3.5.2.1 SR 3.5.2.4 SR 3.5.2.2 ~~SR 3.5.2.7~~	In accordance with applicable SRs

3.6 CONTAINMENT SYSTEMS

3.6.9 Containment Sump

LCO 3.6.9 The containment sump shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment sump inoperable due to containment accident generated and transported debris exceeding the analyzed limits.	A.1 Initiate action to mitigate containment accident generated and transported debris. AND A.2 Perform SR 3.4.13.1 AND A.3 Restore the containment sump to OPERABLE status.	Immediately Once per 24 hours 90 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Containment sump inoperable for reasons other than Condition A.	B.1 ---------- **- NOTES -** 1. Enter applicable Conditions and Required Actions of LCO 3.5.2, "ECCS – Operating," and LCO 3.5.3, "ECCS – Shutdown," for emergency core cooling trains made inoperable by the containment sump. 2. Enter applicable Conditions and Required Actions of LCO 3.6.7, "Recirculation Spray," for recirculation spray trains made inoperable by the containment sump. .....- Restore the containment sump to OPERABLE status.	72 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.9.1	Verify, by visual inspection, the containment sump does not show structural damage, abnormal corrosion, or debris blockage.	In accordance with the Surveillance Frequency Control Program

Attachment 2

Revised Technical Specification Pages (for information only)
(5 pages follow)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.4	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.5.2.5	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.6	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

Information Only

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.3 ECCS - Shutdown

LCO 3.5.3 One ECCS train shall be OPERABLE.

APPLICABILITY: MODE 4.

ACTIONS

- NOTE -

LCO 3.0.4.b is not applicable to ECCS high head subsystem.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required ECCS train inoperable.	A.1 Restore required ECCS train to OPERABLE status.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 5.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	The following SRs are applicable for all equipment required to be OPERABLE: SR 3.5.2.1 SR 3.5.2.4 SR 3.5.2.2	In accordance with applicable SRs

Information Only

3.6 CONTAINMENT SYSTEMS

3.6.9 Containment Sump

LCO 3.6.9 The containment sump shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment sump inoperable due to containment accident generated and transported debris exceeding the analyzed limits.	A.1 Initiate action to mitigate containment accident generated and transported debris. AND	Immediately
	A.2 Perform SR 3.4.13.1 AND	Once per 24 hours
	A.3 Restore the containment sump to OPERABLE status.	90 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Containment sump inoperable for reasons other than Condition A.	B.1 ---------- **- NOTES -** 1. Enter applicable Conditions and Required Actions of LCO 3.5.2, "ECCS – Operating," and LCO 3.5.3, "ECCS – Shutdown," for emergency core cooling trains made inoperable by the containment sump. 2. Enter applicable Conditions and Required Actions of LCO 3.6.7, "Recirculation Spray," for Recirculation Spray trains made inoperable by the containment sump. ---------- Restore the containment sump to OPERABLE status.	72 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.	6 hours 36 hours

Information Only

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.9.1	Verify, by visual inspection, the containment sump does not show structural damage, abnormal corrosion, or debris blockage.	In accordance with the Surveillance Frequency Control Program

Attachment 3

TS Bases Markups (for information only)
(7 pages follow)

BASES

BACKGROUND (continued)

The active ECCS components, along with the passive accumulators, ~~and~~ the RWST, and the containment sump, are covered in LCO 3.5.1, "Accumulators," ~~and~~ LCO 3.5.4, "Refueling Water Storage Tank (RWST)," and LCO 3.6.9, "Containment Sump," and provide the cooling water necessary to meet GDC 35 as discussed in Reference 1.

APPLICABLE SAFETY ANALYSES

The LCO helps to ensure that the following acceptance criteria for the ECCS, established by 10 CFR 50.46 (Ref. 2), will be met following a LOCA:

a. Maximum fuel element cladding temperature is ≤ 2200°F,

b. Maximum cladding oxidation is ≤ 0.17 times the total cladding thickness before oxidation,

c. Maximum hydrogen generation from a zirconium water reaction is ≤ 0.01 times the hypothetical amount generated if all of the metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react,

d. Core is maintained in a coolable geometry, and

e. Adequate long term core cooling capability is maintained.

The LCO also limits the potential for a post trip return to power following an MSLB event and ensures that containment temperature limits are met.

Each ECCS subsystem is taken credit for in a large break LOCA event at full power (Ref. 3). This event establishes the requirement for runout flow for the ECCS pumps, as well as the maximum response time for their actuation. The HHSI pumps are credited in a small break LOCA event. The small break LOCA is an important consideration in determining the performance requirements of the HHSI pumps. The SGTR and MSLB events also credit the HHSI pumps. The OPERABILITY requirements for the ECCS are based on the following LOCA analysis assumptions:

a. A large break LOCA event, with a loss of offsite power or offsite power available and a single failure disabling one ECCS train and

b. A small break LOCA event, with a loss of offsite power and a single failure disabling one ECCS train.

BASES

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~SR 3.5.2.7~~

~~Periodic inspections of the accessible regions of the containment sump suction inlet strainers ensure that they are unrestricted, free of structural distress or abnormal corrosion, and stay in proper operating condition. Accessible regions of the sump strainers are those regions that can be visually examined without disassembling the strainer assembly or the grating and cover plates over the strainer assembly. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

REFERENCES

1. UFSAR, Appendix 1A, "1971 AEC General Design Criteria Conformance, " (Unit 1) and UFSAR, Section 3.1, "Conformance with U.S. Nuclear Regulatory Commission General Design Criteria, " (Unit 2).

2. 10 CFR 50.46.

3. UFSAR, Section 14.3 (Unit 1) and UFSAR, Section 15.6.5 (Unit 2).

4. UFSAR, Section 14.3.4 (Unit 1) and UFSAR, Section 6.2.1 (Unit 2).

5. NRC Memorandum to V. Stello, Jr., from R.L. Baer, "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975.

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B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.3 ECCS - Shutdown

BASES

BACKGROUND

The Background section for Bases 3.5.2, "ECCS - Operating," is applicable to these Bases, with the following modifications.

For Unit 1, in MODE 4, the required ECCS train consists of two subsystems: High Head Safety Injection (HHSI) and the Low Head Safety Injection (LHSI). For Unit 2, in MODE 4, the required ECCS train consists of two subsystems: HHSI and the LHSI (which includes a LHSI pump and recirculation spray pump 2RSS-P21C or 2RSS-P21D and associated heat exchanger).

The ECCS flow paths consist of piping, valves, and pumps such that water from the refueling water storage tank (RWST) and the containment sump can be injected into the Reactor Coolant System (RCS) following the accidents described in Bases 3.5.2.

APPLICABLE SAFETY ANALYSES

The Applicable Safety Analyses section of Bases 3.5.2 also applies to this Bases section.

Due to the stable conditions associated with operation in MODE 4 and the reduced probability of occurrence of a Design Basis Accident (DBA), the ECCS operational requirements are reduced. It is understood in these reductions that certain automatic safety injection (SI) actuation is not available. In this MODE, sufficient time exists for manual actuation of the required ECCS to mitigate the consequences of a DBA.

Only one train of ECCS is required for MODE 4. This requirement dictates that single failures are not considered during this MODE of operation. The ECCS trains satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

In MODE 4, one of the two independent (and redundant) ECCS trains is required to be OPERABLE to ensure that sufficient ECCS flow is available to the core following a DBA.

For Unit 1, in MODE 4, an ECCS train consists of an HHSI subsystem and an LHSI subsystem. The train includes the piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon being manually realigned and transferring suction to the containment sump during the recirculation phase of operation. For Unit 2, in MODE 4, an ECCS train consists of an HHSI subsystem and a LHSI subsystem that includes a LHSI pump used in the injection mode of

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B 3.6 CONTAINMENT SYSTEMS

B 3.6.9 Containment Sump

BASES

BACKGROUND

The containment sump provides a borated water source to support recirculation of coolant from the containment sump for residual heat removal, emergency core cooling, containment cooling, and containment atmosphere cleanup during accident conditions.

The containment sump supplies both trains of the Emergency Core Cooling System (ECCS) and Recirculation Spray (RS) System during any accident that requires recirculation of coolant from the containment sump. The recirculation mode is initiated when the pump suction is transferred to the containment sump on low Refueling Water Storage Tank (RWST) level, which ensures the containment sump has enough water to supply the net positive suction head to the ECCS and RS System pumps. The use of a single containment sump to supply both trains of the ECCS and RS System is acceptable since the containment sump is a passive component, and passive failures are not required to be assumed to occur coincident with Design Basis Events.

The containment sump contains strainers to limit the quantity of the debris materials from entering the sump suction piping. Debris accumulation on the strainers can lead to undesirable hydraulic effects including air ingestion through vortexing or deaeration, and reduced net positive suction head (NPSH) at pump suction piping.

While the majority of debris accumulates on the strainers, some fraction penetrates the strainers and is transported to downstream components in the ECCS, RS System, and the Reactor Coolant System (RCS). Debris that penetrates the strainer can result in wear to the downstream components, blockages, or reduced heat transfer across the fuel cladding. Excessive debris in the containment sump water source could result in insufficient recirculation of coolant during the accident, or insufficient heat removal from the core during the accident.

APPLICABLE SAFETY ANALYSIS

During all accidents that require recirculation, the containment sump provides a source of borated water to the ECCS and RS System pumps. As such, it supports residual heat removal, emergency core cooling, containment cooling, and containment atmosphere cleanup during an accident. It also provides a source of negative reactivity (Ref. 1 and 2). The design basis transients and applicable safety analyses concerning each of these systems are discussed in the Applicable Safety Analyses section of B 3.5.2, "ECCS -Operating," B 3.5.3, "ECCS - Shutdown," and B 3.6.7, "Recirculation Spray (RS) System."

UFSAR Appendix 6A (Ref. 3) describes evaluations that confirm long-

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BASES

APPLICABLE SAFETY ANALYSIS (continued)

term core cooling is assured following any accident that requires recirculation from the containment sump.

The containment sump satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The containment sump is required to ensure a source of borated water to support ECCS and RS System OPERABILITY. A containment sump consists of the containment drainage flow paths, the containment sump strainers, and the inlet to the ECCS and RS System piping. An OPERABLE containment sump has no structural damage or abnormal corrosion that could prevent recirculation of coolant and will not be restricted by containment accident generated and transported debris.

Containment accident generated and transported debris consists of the following:

a. Accident generated debris sources - Insulation, coatings, and other materials which are damaged by the high-energy line break (HELB) and transported to the containment sump. This includes materials within the HELB zone of influence and other materials (e.g., unqualified coatings) that fail due to the post-accident containment environment following the accident;

b. Latent debris sources -Pre-existing dirt, dust, paint chips, fines or shards of insulation, and other materials inside containment that do not have to be damaged by the HELB to be transported to the containment sump; and

c. Chemical product debris sources -Aluminum, zinc, carbon steel, copper, and non-metallic materials such as paints, thermal insulation, and concrete that are susceptible to chemical reactions within the post-accident containment environment leading to corrosion products that are generated within the containment sump pool or are generated within containment and transported to the containment sump.

Containment debris limits are defined in UFSAR Appendix 6A (Ref. 3).

APPLICABILITY

In MODES 1, 2, 3, and 4, containment sump OPERABILITY requirements are dictated by the ECCS and RS System OPERABILITY requirements. Since both the ECCS and the RS System must be OPERABLE in MODES 1, 2, 3, and 4, the containment sump must also be OPERABLE to support their operation.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Thus, the containment sump is not required to be OPERABLE in MODES 5 or 6.

Information Only

BASES

ACTIONS

A.1, A.2, and A.3

Condition A is applicable when there is a condition which results in containment accident generated and transported debris exceeding the analyzed limits. Containment debris limits are defined in UFSAR Appendix 6A (Ref. 3).

Immediate action must be initiated to mitigate the condition. Examples of mitigating actions are:

- Removing the debris source from containment or preventing the debris from being transported to the containment sump;
- Evaluating the debris source against the assumptions in the analysis;
- Deferring maintenance that would affect availability of the affected systems and other LOCA mitigating equipment;
- Deferring maintenance that would affect availability of primary defense-in-depth systems, such as containment coolers;
- Briefing operators on LOCA debris management actions; or
- Applying an alternative method to establish new limits.

While in this condition, the RCS water inventory balance, SR 3.4.13.1, must be performed at an increased Frequency of once per 24 hours. An unexpected increase in RCS leakage could be indicative of an increased potential for an RCS pipe break, which could result in debris being generated and transported to the containment sump. The more frequent monitoring allows operators to act in a timely fashion to minimize the potential for an RCS pipe break while the containment sump is inoperable.

The inoperable containment sump must be restored to OPERABLE status in 90 days. A 90-day Completion Time is reasonable for emergent conditions that involve debris in excess of the analyzed limits that could be generated and transported to the containment sump under accident conditions. The likelihood of an initiating event in the 90-day Completion Time is very small and there is margin in the associated analyses. The mitigating actions of Required Action A.1 provide additional assurance that the effects of debris in excess of the analyzed limits will be mitigated during the Completion Time.

B.1

When the containment sump is inoperable for reasons other than Condition A, such as blockage, structural damage, or abnormal corrosion that could prevent recirculation of coolant, it must be restored to OPERABLE status within 72 hours. The 72 hour Completion Time takes into account the reasonable time for repairs, and low probability of an accident that requires the containment sump occurring during this period.

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BASES

ACTIONS (continued)

Required Action B.1 is modified by two Notes. The first Note indicates that the applicable Conditions and Required Actions of LCO 3.5.2, "ECCS - Operating," and LCO 3.5.3, "ECCS - Shutdown," should be entered if an inoperable containment sump results in an inoperable ECCS train. The second Note indicates that the applicable Conditions and Required Actions of LCO 3.6.7, "Recirculation Spray (RS) System," should be entered if an inoperable containment sump results in an inoperable RS System train. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components.

C.1 and C.2

If the containment sump cannot be restored to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.9.1

Periodic inspections are performed to verify the containment sump does not show current or potential debris blockage, structural damage, or abnormal corrosion to ensure the operability and structural integrity of the containment sump (Ref. 1 and 2).

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. UFSAR, Sections 6 and 14 (Unit 1).

2. UFSAR, Sections 6 and 15 (Unit 2).

3. UFSAR, Appendix 6A (Unit 1 and Unit 2).